

Please check the examination details below before entering your candidate information

Candidate surname

Other names

**Pearson Edexcel  
International GCSE (9–1)**

Centre Number

--	--	--	--	--

Candidate Number

--	--	--	--

**Time** 1 hour 10 minutes

**Paper  
reference**

**4GE1/01**

**Geography**  
**PAPER 1: Physical geography**

**You must have:**  
Resource Booklet (enclosed), calculator

Total Marks

### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- In Section A, answer **two** questions from Questions 1, 2 **and** 3.
- In Section B, answer **one** question from Questions 4, 5 **and** 6.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*
- Calculators may be used.
- Where asked you must show **all your working out** with **your answer clearly identified** at the **end of your solution**.

### Information

- The total mark for this paper is 62.
- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*

### Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.
- Good luck with your examination.

Turn over ►

P66579RA

©2021 Pearson Education Ltd.

1/1/1/1/1/1/1



Pearson

SECTION A

Answer TWO questions from this section.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

If you answer Question 1 put a cross in the box ☒ .

1 River environments

(a) (i) Identify **one** transfer in the hydrological cycle. (1)

<input type="checkbox"/>	<b>A</b> Groundwater
<input type="checkbox"/>	<b>B</b> Infiltration
<input type="checkbox"/>	<b>C</b> Interception
<input type="checkbox"/>	<b>D</b> Lake

(ii) Identify the statement that best defines **evapotranspiration**. (1)

<input type="checkbox"/>	<b>A</b> Loss of water from the ground from water stores and plants.
<input type="checkbox"/>	<b>B</b> Movement of water from stores underground.
<input type="checkbox"/>	<b>C</b> Loss of water from the atmosphere into other stores.
<input type="checkbox"/>	<b>D</b> Movement of water over the ground into other stores.

(b) (i) State **one** physical factor that influences rates of erosion in a river. (1)

.....

.....

(ii) Explain how the process of hydraulic action erodes the river channel. (2)

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



(c) Study Figure 1a in the Resource Booklet.

Suggest **two** physical factors that affect these differences in lag time.

(4)

1 .....

.....

.....

.....

2 .....

.....

.....

.....

(d) Explain **one** way industry can affect water quality.

(3)

.....

.....

.....

.....

.....

.....

(e) Study Figure 1b in the Resource Booklet.

Identify the landform labelled **X**.

(1)

.....



(f) Explain the formation of a levee.

(4)

.....

.....

.....

.....

.....

.....

.....

.....

(g) Study Figure 1c in the Resource Booklet.

Analyse the factors that affect flood risk.

(8)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 1 = 25 marks)



P 6 6 5 7 9 R A 0 5 2 4

If you answer Question 2 put a cross in the box  .

## 2 Coastal environments

(a) Identify a biotic factor that affects coastal ecosystems.

(1)

<input type="checkbox"/>	<b>A</b> Wind
<input type="checkbox"/>	<b>B</b> Plants
<input type="checkbox"/>	<b>C</b> Interception
<input type="checkbox"/>	<b>D</b> Temperature

(b) (i) Identify the best definition of **biological weathering**.

(1)

<input type="checkbox"/>	<b>A</b> Where plant roots grow into cracks in the rocks.
<input type="checkbox"/>	<b>B</b> Where plants take over the coastal landscape.
<input type="checkbox"/>	<b>C</b> Where plant roots are damaged by rocks.
<input type="checkbox"/>	<b>D</b> Where wind causes erosion of rock.

(ii) State **one** type of coastal mass movement.

(1)

(iii) Explain **one** type of hard engineering that is used in coastal management.

(2)

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



(c) Study Figure 2a in the Resource Booklet.

Suggest **two** physical factors that affect the distribution of coral reef ecosystems.

(4)

1 .....

.....

.....

.....

2 .....

.....

.....

.....

(d) Explain **one** way tourism can threaten coastal ecosystems.

(3)

.....

.....

.....

.....

.....

.....

(e) Study Figure 2b in the Resource Booklet.

Identify the landform labelled **X**.

(1)

.....



(f) Explain **two** ways the use of predictive techniques could reduce the impact of coastal flooding.

(4)

1 .....

.....

.....

.....

2 .....

.....

.....

.....

(g) Study Figure 2c in the Resource Booklet.

Analyse why there may be conflicts over management strategies in coastal environments.

(8)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....





DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 2 = 25 marks)



P 6 6 5 7 9 R A 0 9 2 4

If you answer Question 3 put a cross in the box  .

### 3 Hazardous environments

(a) Identify the factor that produces the occurrence of an earthquake.

(1)

<input type="checkbox"/>	<b>A</b> Ocean surface movement
<input type="checkbox"/>	<b>B</b> Tsunami wave formation
<input type="checkbox"/>	<b>C</b> Tectonic plate movement
<input type="checkbox"/>	<b>D</b> Average temperature change

(b) (i) Identify a way to help plan for tropical cyclone hazards.

(1)

<input type="checkbox"/>	<b>A</b> Monitor earth movement with a seismograph.
<input type="checkbox"/>	<b>B</b> Satellite technology to track development of storms.
<input type="checkbox"/>	<b>C</b> Send emergency aid to countries that experience cyclones.
<input type="checkbox"/>	<b>D</b> Monitor any changes in groundwater levels.

(ii) State **one** reason why people continue to live in areas at risk from natural hazard events.

(1)

.....

.....

(iii) Explain **one** economic impact of a tropical cyclone hazard.

(2)

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



(c) Study Figure 3a in the Resource Booklet.

Suggest **two** reasons why some populations are more at risk from the impacts of tropical cyclones than others.

(4)

1 .....

.....

.....

.....

.....

.....

.....

2 .....

.....

.....

.....

.....

.....

.....

(d) Explain the cause of an earthquake.

(3)

.....

.....

.....

.....

.....

.....

.....

.....

.....

(e) Study Figure 3b in the Resource Booklet.

Identify **one** hazard associated with the volcanic eruption.

(1)

.....



(f) Explain why volcanoes do not always form on plate boundaries.

(4)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(g) Study Figure 3c in the Resource Booklet.

Analyse the different strategies for preparing for earthquakes.

(8)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 3 = 25 marks)

**TOTAL FOR SECTION A = 50 MARKS**



SECTION B

Geographical Enquiry

Answer ONE question from this section.

If you answer Question 4 put a cross in the box  .

Investigating river environments

4 (a) (i) Identify a suitable piece of equipment to measure river velocity. (1)

<input type="checkbox"/>	A Anemometer
<input type="checkbox"/>	B Quadrat
<input type="checkbox"/>	C Clinometer
<input type="checkbox"/>	D Stopwatch

(ii) Name **one** type of sampling method. (1)

(iii) Describe **one** way GIS might be used for fieldwork in a river environment. (2)

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



(b) Study Figure 4 in the Resource Booklet. It shows some information about methods used, data collected and a conclusion.

The aim of the student's enquiry was to examine change in river channel shape along the course of a river.

Evaluate how far the student's data presentation methods and analysis helped the student to make their conclusions.

(8)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Area with horizontal dotted lines for writing.



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 4 = 12 marks)





DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**BLANK PAGE**



If you answer Question 5 put a cross in the box  .

### Investigating coastal environments

5 (a) (i) Identify a suitable piece of equipment to measure beach gradient. (1)

<input type="checkbox"/>	<b>A</b> Anemometer
<input type="checkbox"/>	<b>B</b> Quadrat
<input type="checkbox"/>	<b>C</b> Clinometer
<input type="checkbox"/>	<b>D</b> Stopwatch

(ii) Name **one** type of sampling method. (1)

(iii) Describe **one** way GIS might be used for fieldwork in a coastal environment. (2)

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



(b) Study Figure 5 in the Resource Booklet. It shows some information about methods used, data collected and a conclusion.

The aim of the student's investigation was to examine change in beach characteristics along a stretch of coastline.

Evaluate how far the student's data presentation methods and analysis helped the student to make their conclusions.

(8)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Area with horizontal dotted lines for writing.



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 5 = 12 marks)



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**BLANK PAGE**



If you answer Question 6 put a cross in the box  .

### Investigating hazardous environments

6 (a) (i) Identify a suitable piece of equipment to measure wind speed. (1)

<input type="checkbox"/>	<b>A</b> Anemometer
<input type="checkbox"/>	<b>B</b> Quadrat
<input type="checkbox"/>	<b>C</b> Clinometer
<input type="checkbox"/>	<b>D</b> Stopwatch

(ii) Name **one** type of sampling method. (1)

(iii) Describe **one** way GIS might be used for fieldwork in a hazardous environment. (2)

.....

.....

.....

.....

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(b) Study Figure 6 in the Resource Booklet. It shows some information about methods used, data collected and a conclusion.

The aim of the student's investigation was to examine change in local weather conditions.

Evaluate how far the student's data presentation methods and analysis helped the student to make their conclusions.

(8)

Area with horizontal dotted lines for writing.



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

(Total for Question 6 = 12 marks)

**TOTAL FOR SECTION B = 12 MARKS**  
**TOTAL FOR PAPER = 62 MARKS**





# Pearson Edexcel International GCSE (9–1)

Time 1 hour 10 minutes

Paper  
reference

**4GE1/01**

## Geography

### PAPER 1: Physical geography

#### Resource Booklet

Do not return this Booklet with the question paper.

P66579RA

©2021 Pearson Education Ltd.

1/1/1/1/1/1/1

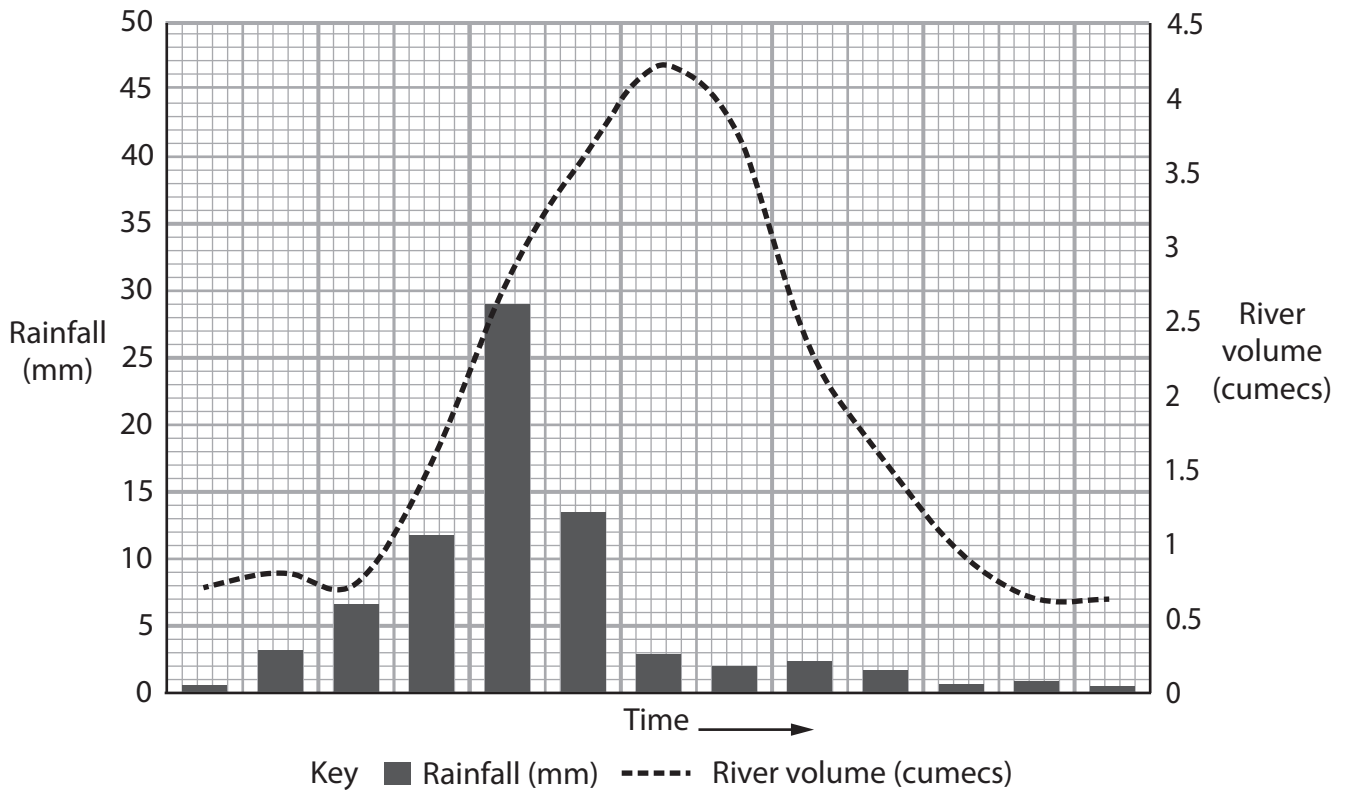


P 6 6 5 7 9 R A

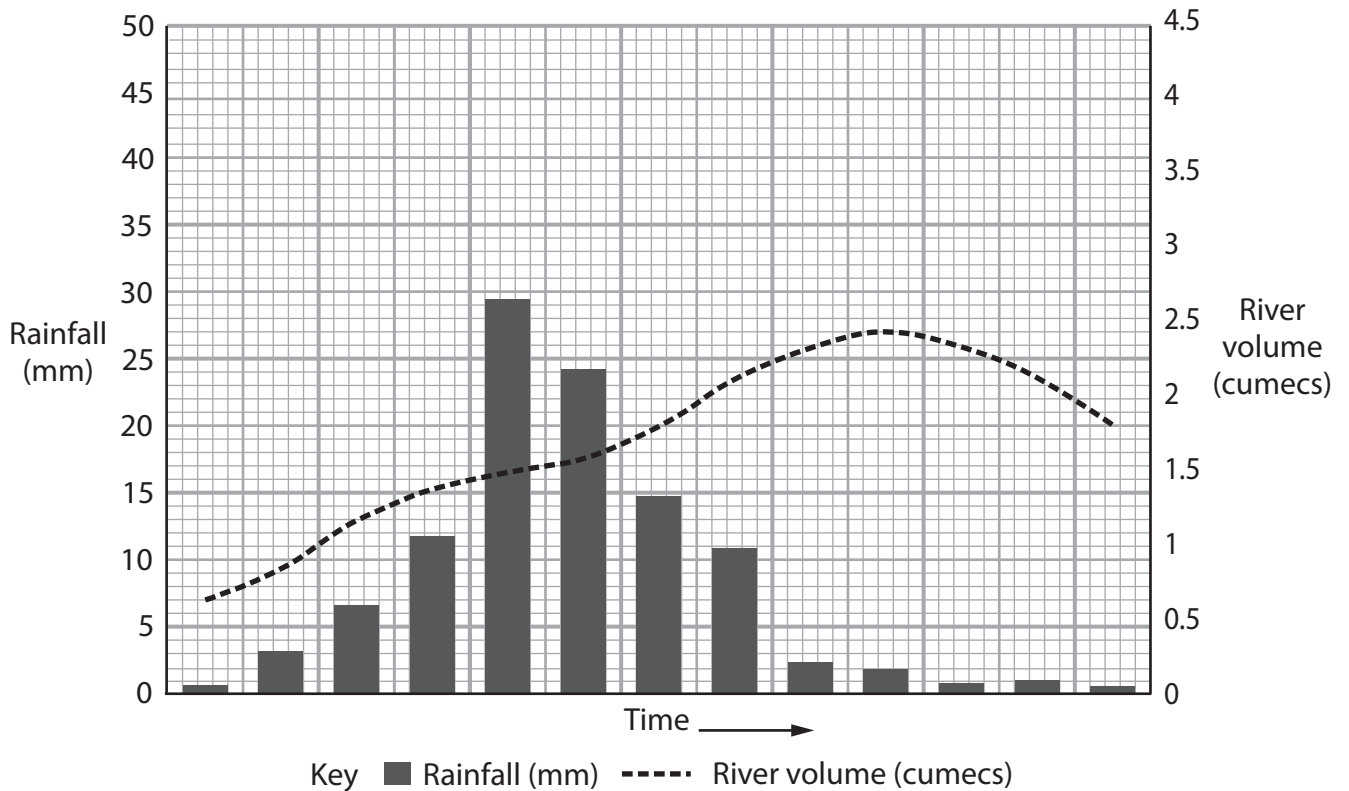
Turn over ►



Pearson



Storm hydrograph in an urban area



Storm hydrograph in a rural area

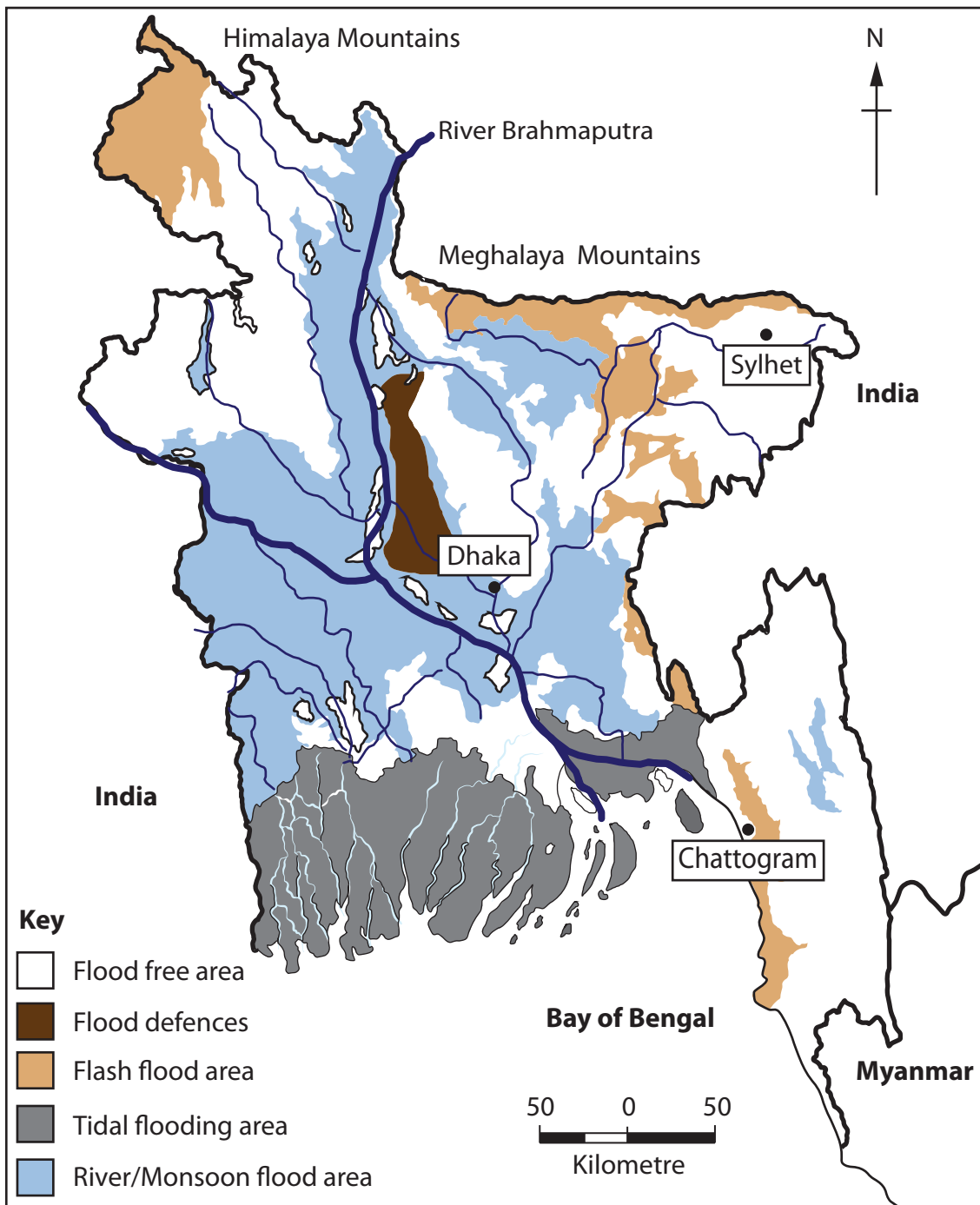
**Figure 1a**

**Two storm hydrographs in a river basin**



**Figure 1b**

**River landform in Barriosa, Serra da Estrela, Portugal**

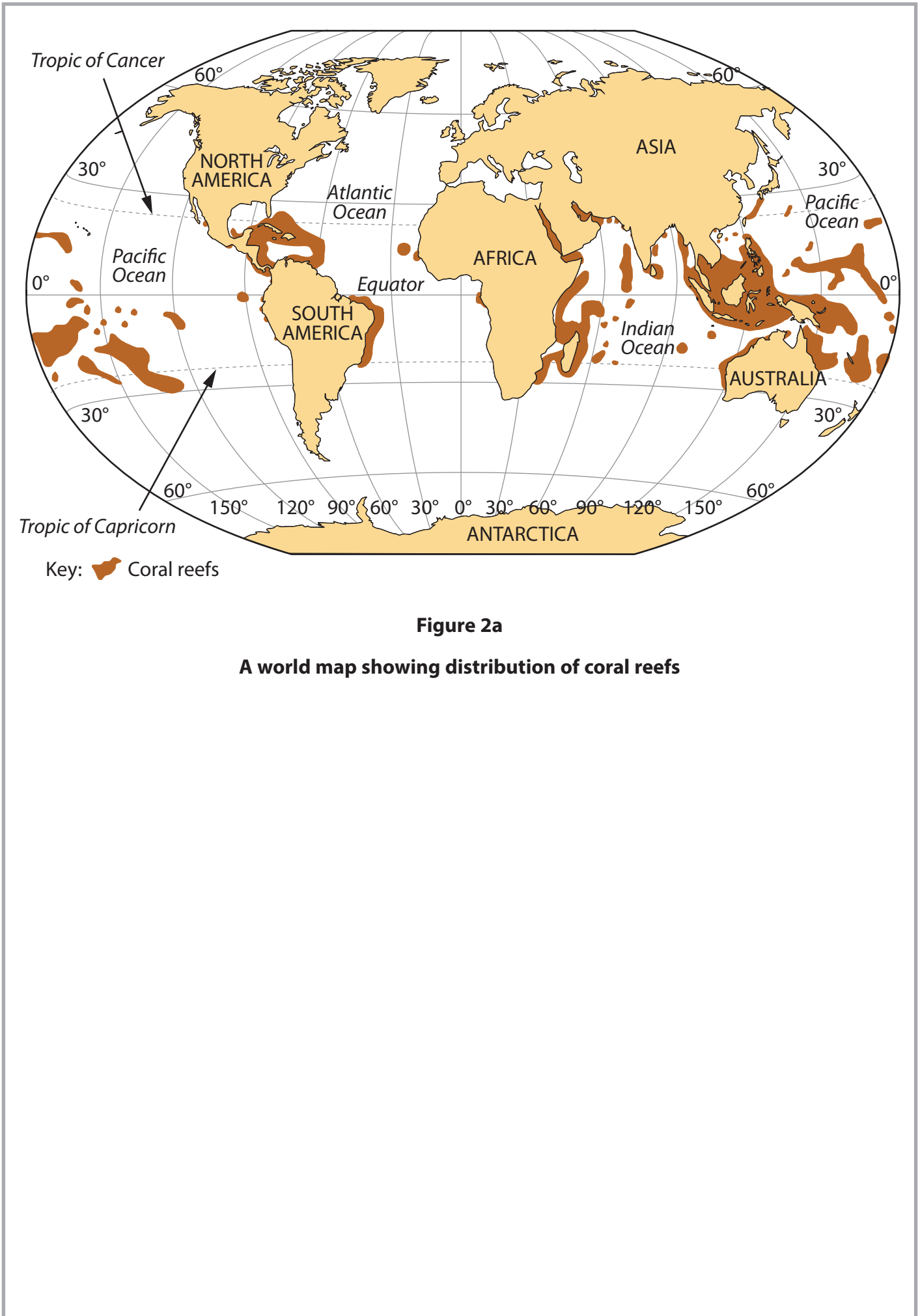


### 2019 floods in Bangladesh

- 119 people drowned and over 4 million people affected.
- Over 580,000 houses damaged.
- 30% of Bangladesh's land mass is in danger of flooding during monsoon season.
- More than two thirds of Bangladesh is less than 5 metres above sea level.
- Snowmelt took place from mountain areas.

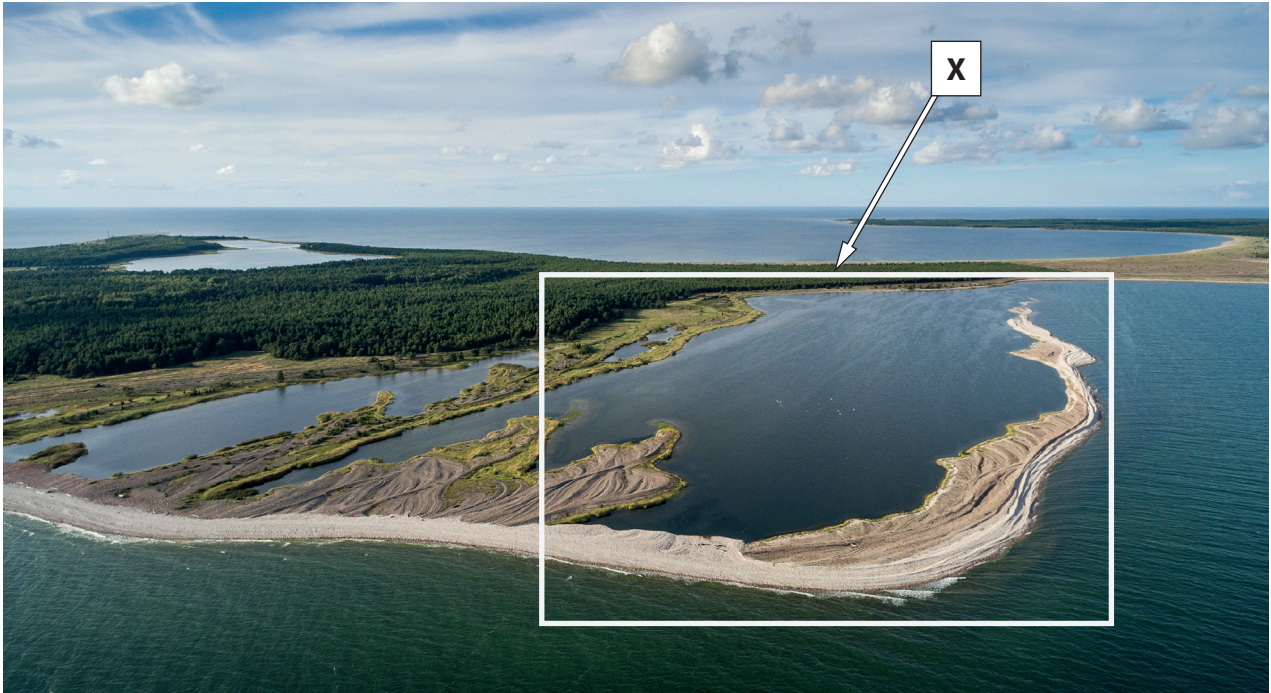
Figure 1c

A map of flood risk in Bangladesh



**Figure 2a**

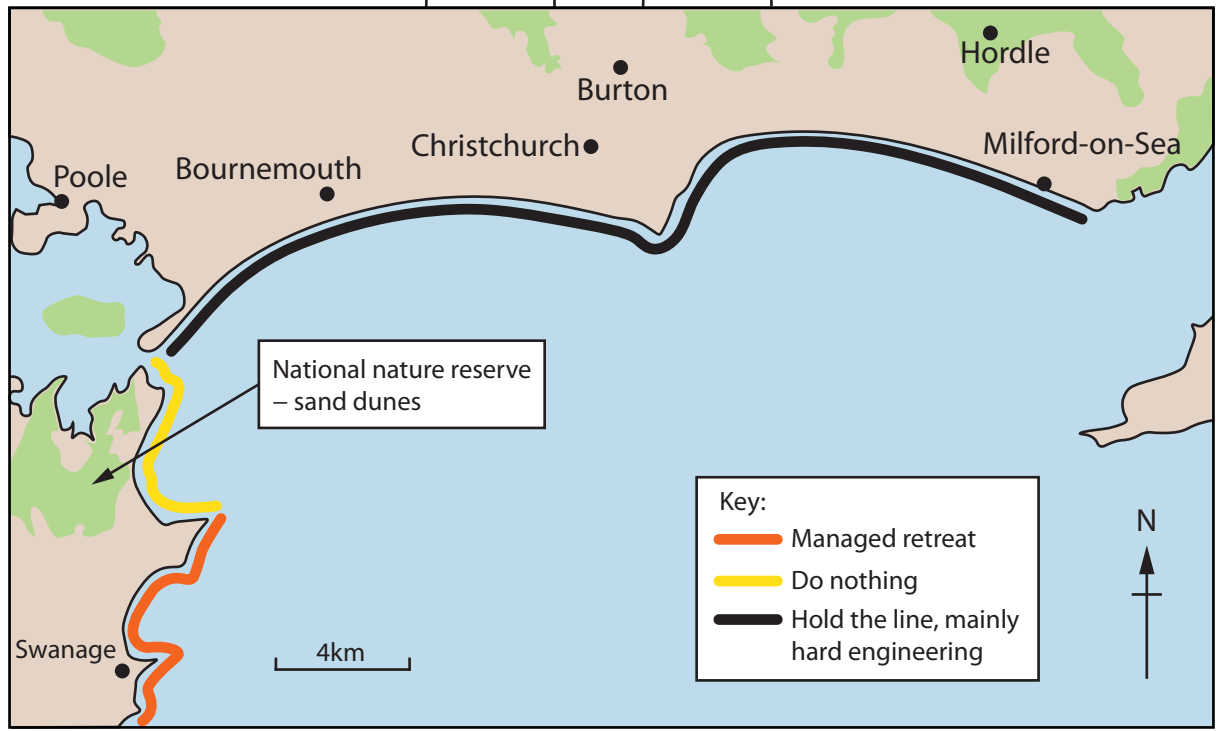
**A world map showing distribution of coral reefs**



**Figure 2b**  
**Coastal landform Harilaid, Vilsandi in Estonia**

"We need the groynes and the sea walls; our coastline attracts over 25 million day visitors annually."  
*Local business owner*

"We just need to let nature take its course and conserve the land to protect species diversity."  
*Conservationist*

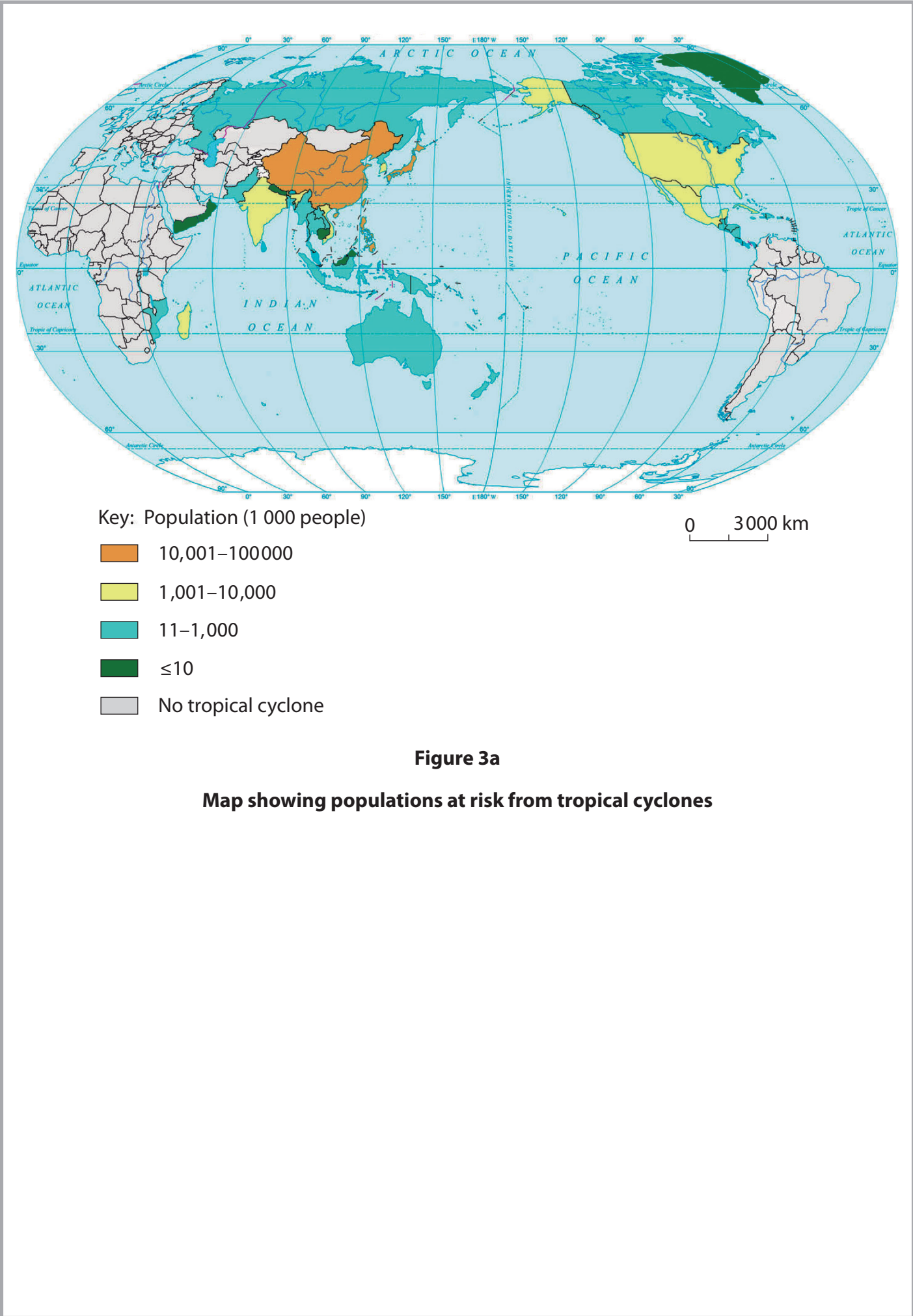


"We recognise the need to protect the natural beauty of our coastline, as well as protect the biodiversity, but we also have to protect our residents and their livelihood as tourism is a major employer."  
*Local councillor*

"The sea walls and groynes do ruin the scenery a bit. I can understand why they are there, but we prefer that the area is just left alone."  
*Tourist*

**Figure 2c**

**Different views on coastal management strategies along the Dorset coast, UK**



**Figure 3a**

**Map showing populations at risk from tropical cyclones**





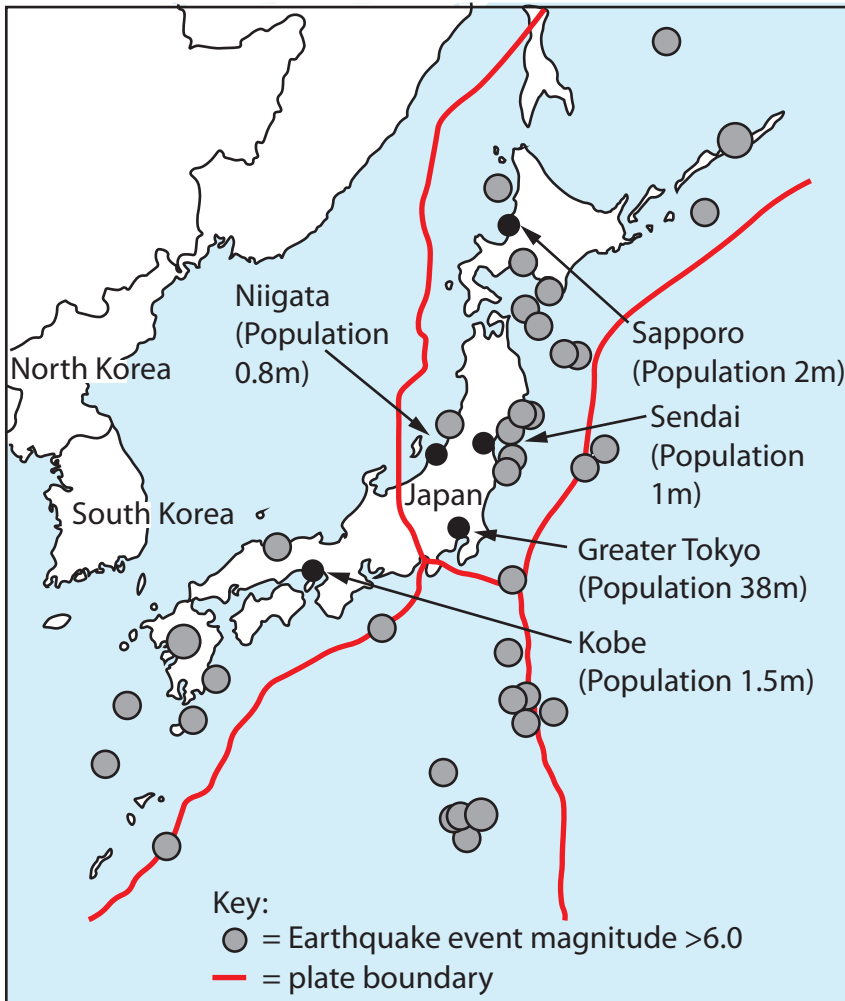
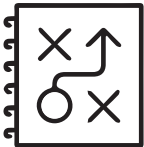
**Figure 3b**

**A volcanic eruption in Guatemala**

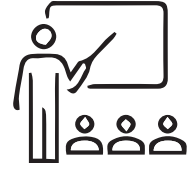
Early warning systems sending text messages to people who may be at risk when seismic movement detected.



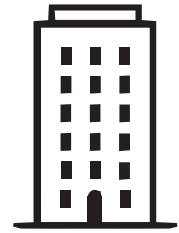
Evacuation plans in place with designated exit routes and shelters.



Education about procedures to follow during an earthquake event.



New buildings are designed to withstand ground movement due to earthquakes.



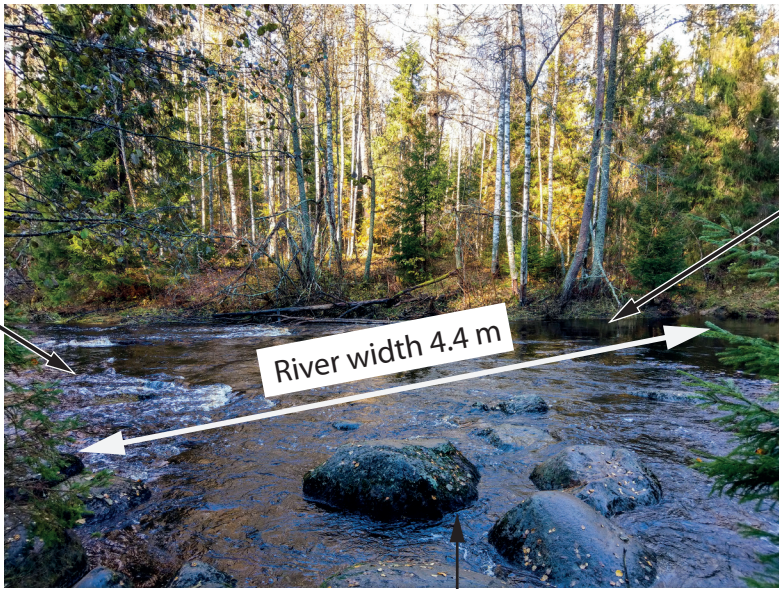
Emergency services well trained for rapid response. Medical and food supplies stored in key locations. Most families have their own survival kits.



Figure 3c

Japan's vulnerability to and preparations for earthquakes

Average river velocity at this site was 1.2 m/s



Site 1  
Upper river course

River width 4.4 m

Large rocks in the river prevented recording the depth of the river at times.

**Extract from the student's data presentation methods**

Measurement attempt	Site 1 (m/s)	Site 2 (m/s)	Site 3 (m/s)
1	1.2	2.0	1.2
2	1.6	2.2	1.1
3	1.4	2.1	1.2
4	1.2	2.4	1.5
Average	1.35	2.18	1.25

**Extract from the student's data for river velocity**

Conclusions	
1	I found that the characteristics of the river changed along the course of the river.
2	Calculating river velocity at each site allowed me to find out that river velocity is fastest in the upper course of the river.
3	There may have been anomalies in the river depth data as sometimes large rocks were in the way.

**Extract from the student's conclusions**

**Figure 4**



Beach profile length measured 12 m

Site 2 Shingle beach

Coarse angular stones towards the top of the beach as well as in some patches near the sea

**Extract from the student's data presentation methods**

Measurement attempt	Site 1 (mm)	Site 2 (mm)	Site 3 (mm)
1	60	45	12
2	67	32	16
3	55	12	22
4	64	28	18
Average	61.5	29.25	17

**Extract from the student's data for sediment length**

Conclusions	
1	I found that the characteristics of the beach changed along the coastline.
2	The stones on the beach became larger as I moved further away from the sea.
3	There may have been anomalies in the beach profile as sometimes there were rocks in the way that affected the measurements.

**Extract from the student's conclusions**

**Figure 5**

Temperature remains consistent at 22°C across time period studied.

As well as high winds this site received 20 cm of rainfall.



Evidence of damage caused by strong winds.

Despite having the same wind strength as other sites it experienced more damage.

**Extract from the student's data presentation methods**

Measurement attempt	Site 1 (°C)	Site 2 (°C)	Site 3 (°C)
1	16.4	17.6	12.4
2	17.2	18.3	13.5
3	16.1	17.2	12.9
4	16.5	16.9	11.0
Average	16.55	17.50	12.45

**Extract from the student's data for temperature**

	Conclusions
1	I found that the weather characteristics in all sites were similar, and changes were reflected in both sites.
2	There was more evidence of damage by wind at site 2 because it was a more built up area.
3	There may have been anomalies in the wind speed data recorded as there were two outliers in the data.

**Extract from the student's conclusions**

**Figure 6**

**BLANK PAGE**

**BLANK PAGE**

**BLANK PAGE**

**Acknowledgements**

Pearson Education Ltd. gratefully acknowledges all following sources used in preparation of this paper:

**Figure 1b** (Source: © Zdenek Matyas Photography/Shutterstock)

**Figure 1c** (Source: <https://www.odi.org/sites/odi.org.uk/files/resource-documents/12641.pdf>)

**Figure 2a** (Source: <https://sites.google.com/site/imperiledcoralreefs/>)

**Figure 2b** (Source: © F-Focus by Mati Kose/Shutterstock)

**Figure 3a** (Source: [https://www.researchgate.net/publication/282357006\\_Mapping\\_Tropical\\_Cyclone\\_Wind\\_Risk](https://www.researchgate.net/publication/282357006_Mapping_Tropical_Cyclone_Wind_Risk))

**Figure 3b** (Source: © fboudrias/Shutterstock)

**Figure 3c** (Source: <https://earthquake.usgs.gov/>)

**Figure 4** (Source: © Sisika/Shutterstock)

**Figure 5** (Source: Used under <https://creativecommons.org/licenses/by-nc-nd/2.0>)

**Figure 6** (Source: © Huguette Roe/Shutterstock)